

2. OWENS VALLEY OPERATIONS PLAN FOR RUNOFF YEAR 2013-14

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This year's annual operations plan and pumping program is consistent with the management strategy of the Water Agreement between the County of Inyo (County) and the City of Los Angeles (City) dated October 18, 1991. As stated in the Water Agreement:

The overall goal of managing the water resources within Inyo County is to avoid certain described decreases and changes in vegetation and to cause no significant effect on the environment which cannot be acceptably mitigated while providing a reliable supply of water for export to Los Angeles and for use in Inyo County.

The overall goal of the Water Agreement: environmental protections and a reliable water supply are the basis of the Los Angeles Department of Water and Power's (LADWP) operations plans. Groundwater pumping in the Owens Valley is managed in conformance with the provisions of the Water Agreement. The Water Agreement provides:

By April 20th of each year, the Department shall prepare and submit to the Inyo County Technical Group a proposed operations plan and pumping program for the twelve (12) month period beginning on April 1st. (In the event of two consecutive dry years when actual and forecasted Owens Valley runoff for the April to September period is below normal and averages less than 75 percent of normal, the Department shall prepare a proposed plan for the six (6) month period beginning on April 1st and October 1st, and submit such plans by April 20th and October 20th.)

2.1. Eastern Sierra Runoff Forecast

The Eastern Sierra Runoff Forecast for the 2013-14 runoff year (Table 1) is based on snow surveys of key Eastern Sierra watersheds in Inyo and Mono counties that contribute the majority of runoff water into the Owens Valley. The Eastern Sierra Runoff Forecast is used for planning aqueduct operations. The forecast Eastern Sierra runoff for 2013-14 runoff year is 220,900 acre-feet, or about 54% of the 1961-2010 long-term average annual runoff value of 412,284 acre-feet.

For the period of April 1 through September 30, 2012, Eastern Sierra runoff was approximately 154,608 acre-feet, or 51% of long term average value of 303,903 acre-feet. The forecast runoff for the period between April 1 through September 30, 2013 is 140,500 acre-feet for the Owens River Basin or 46% of the long term average.

Figure 1 summarizes Owens Valley runoff and groundwater pumping by LADWP since the 1971 runoff year.

Figure 1 - Owens Valley Runoff and Groundwater Pumping

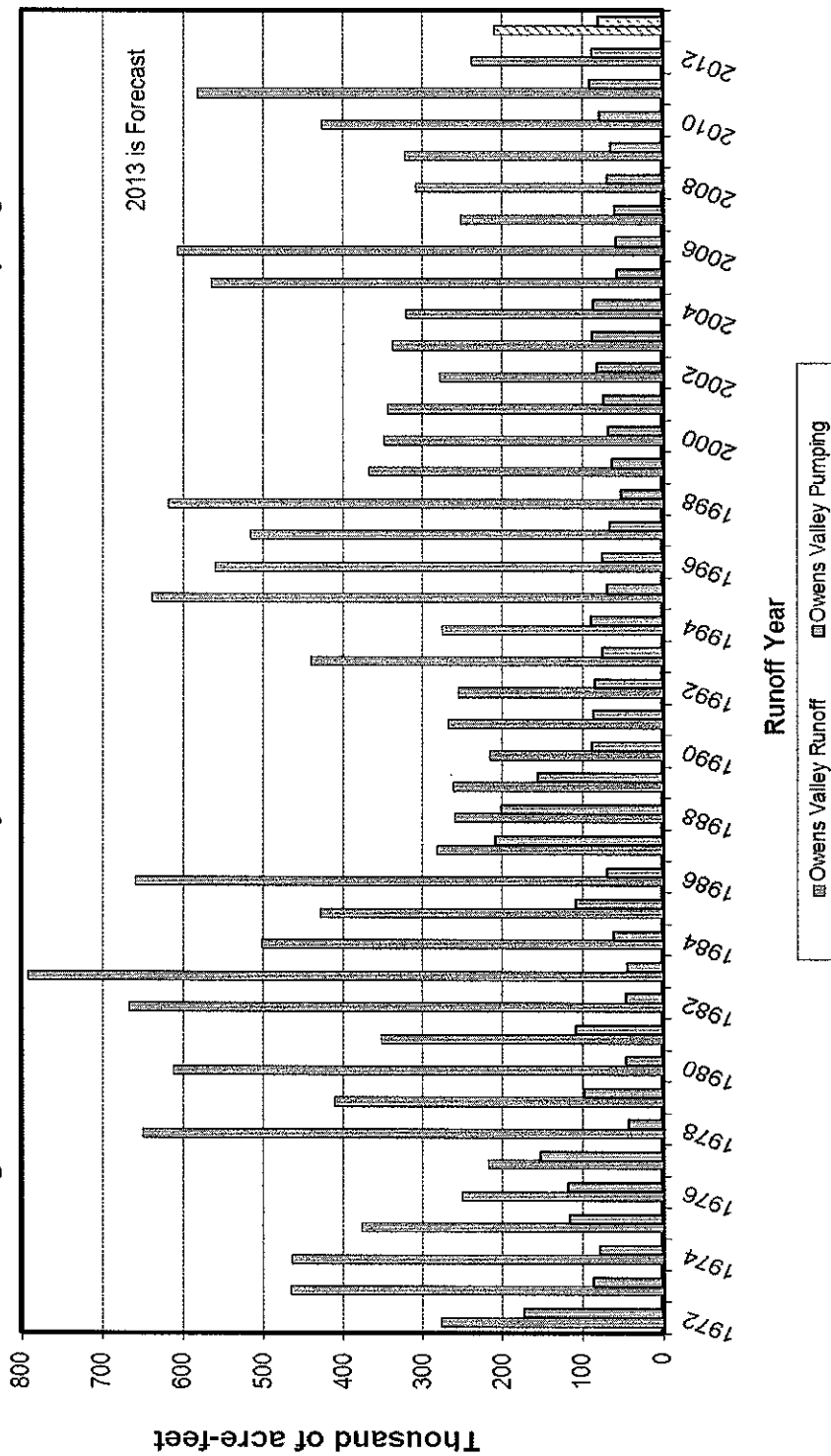


Figure 1. Owens Valley Runoff and Groundwater Pumping

2.2. Owens Valley Groundwater Production

LADWP has prepared its 2013-14 Annual Owens Valley Operations Plan based on the goals and principles of the Water Agreement. The 2013-14 Annual Owens Valley Operations Plan is designed to avoid adverse impacts to the environment while providing a reliable supply of water for in-valley uses and export to Los Angeles for municipal use.

Under the terms of the Water Agreement, the acceptable amount of groundwater pumping from each Owens Valley well field is based on the ON/OFF status of monitoring sites located within each well field and the capacity of the wells linked to those sites (see Water Agreement Sections V.B and V.C). The Water Agreement or Technical Group has designated certain town supply wells, irrigation supply wells, fish hatchery supply wells, enhancement/mitigation (E/M) project supply wells, and other wells determined not to significantly impact areas with groundwater dependent vegetation as exempt from the ON/OFF provisions of the Water Agreement. These exempt wells may be pumped for their intended purpose. Table 2 lists the ON/OFF status of the monitoring sites within the Owens Valley as of April 2013.

Table 3 provides a breakdown of available annual pumping capacity and planned groundwater pumping for the first six months of the 2013-14 runoff year by well field. Pursuant to Water Agreement Section V.D, LADWP shall submit a plan for the second six months of the runoff year on or about October 20, 2013. Table 3 also shows the monitoring sites in ON status as of April 2013, the wells associated with the ON status monitoring sites, and the exempt wells in each well field. Approximately 134,411 acre-feet of water are available for groundwater pumping from Owens Valley well fields under the terms of the Water Agreement during the 2013-14 runoff year. LADWP plans to pump between 44,610 and 54,660 acre-feet during the first six months of the 2013-14 runoff year. Groundwater pumping will provide water for Owens Valley uses and Los Angeles municipal supply. Working with the Inyo/Los Angeles Technical Group, LADWP will monitor Owens Valley environmental conditions to assess if further changes to the planned pumping are needed. LADWP's 2013-14 conservative groundwater management approach is in keeping with the environmentally conservative pumping plans advocated by the Standing Committee during the dry years of the early 1990s. While LADWP plans to pump considerably less groundwater than made available under Water Agreement Section V, the Inyo/Los Angeles Standing Committee may agree upon additional reductions in groundwater pumping pursuant to Water Agreement Section IV.A. To that end, LADWP has requested Inyo County to consider temporary nominal reductions in irrigation during the current runoff year, which will facilitate additional reductions in groundwater pumping.

Figure 2 compares the amount of Owens Valley groundwater pumping provided by the provisions of Water Agreement and the actual groundwater pumping by LADWP for each runoff year since 1992 (available pumping was not calculated prior to 1992). LADWP's anticipated pumping for the 2013-14 runoff year is consistent with its past conservative pumping plans. LADWP is committed to conducting its operations in a conservative, responsible, and environmentally sustainable manner.

In addition to complying with the ON/OFF provisions and the environmental protection goals of the Water Agreement, LADWP's 2013-14 pumping program considers the groundwater mining provisions of the Green Book. Table 4 shows the latest update of the mining calculations based on the procedures described in Section IV.C of the Green Book. As shown in this table, none of the well fields in the Owens Valley will be in deficit by the end of the first half of the 2013-14 runoff year.

Table 5 is a list of Owens Valley wells exempted under the Water Agreement or by approval of the Technical Group from linkage to vegetation monitoring sites and the ON/OFF provisions. The table includes a list of wells by well number, general location of the exempt well, and the reason the well is exempt.

Table 6 details planned groundwater pumping for the first six months of the 2013-14 runoff year on a month-to-month basis for each well field. Pumping for town water systems, fish hatcheries, and enhancement/mitigation (E/M) projects is included in the pumping distribution. Owens Valley groundwater production for the 2013-14 runoff year is consistent with the provisions of the Water Agreement. No additional testing of wells subject to the Water Agreement is included in this year's planned pumping total and if performed, will be in addition to the planned pumping for 2013-14. Planned pumping may be increased to provide freeze protection for the Los Angeles Aqueduct (LAA).

The following is a discussion of the planned pumping program by well field. Figures 3, 4, and 6 through 10 locate LADWP's Owens Valley pumping wells by well field. These figures show the location of production wells, monitoring wells, and vegetation monitoring sites in each area.

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Table 2. Soil/Vegetation Water Balance Calculations for April 2013 According to Section III of the Green Book

Table 2 - Soil / Vegetation Water Balance Calculations for April 2013 According to Section III of Green Book

Site	Oct 2011 Soil AWC (cm)	50% Annual Precip. (cm)	Pre- Soil AWC (cm)	Oct. 2011 Veg. Water Req./ Water Req. for Well Turn-On (cm)	Oct 2011 Status	April soil AWC (cm)	April 2012 Status	Soil AWC Req. for Well Turn-On (cm)
L1	2.1	NA	2.1	2.3/15.6	OFF	3.5	OFF	15.6, OFF 7-10
L2	17.5	7.9	25.4	9.1/NA	ON	18.6	ON	NA
L3	7.4	NA	7.4	12.0/25.2	OFF	14.1	OFF	25.2, OFF 10-11
BP1	5.4	NA	5.4	15.3/27.9	OFF	5.9	OFF	22.9H, OFF 10-97
BP2	2.4	NA	2.4	13.5/34	OFF	2.1	OFF	28.4, OFF 7-98
BP3	5.0	NA	5	10.6/10.6	OFF	4.3	OFF	10.6, OFF 7-12
BP4	49.6	8.2	54	14.1/NA	ON	49.9	ON	NA
TA3	7.3	NA	7.3	25.0/26.0	OFF	7.6	OFF	26.0, OFF 10-11
TA4	14.5	NA	14.5	17.3/23.3	OFF	17.5	OFF	23.3, OFF 10-11
TA5	20.7	8.2	28.9	6.2/NA	ON	20.8	ON	NA
TA6	9.1	NA	9.1	25.5/17.6	OFF	8.5	OFF	17.6, OFF 10-11
TS1	1.5	NA	1.5	8.3/20.4	OFF	1.5	OFF	20.4H, OFF 10-96
TS2	8.0	7.3	15.3	7.4/NA	ON	8.1	ON	NA
TS3	23.9	7.3	31.2	32.9/NA	OFF	31.3	OFF	32.9, OFF 10-12
TS4	29.9	NA	29.9	51.7/55.9	OFF	42.4	OFF	55.9, OFF 10-11
IO1	26.3	NA	26.3	88.8/42.2	OFF	28.5	OFF	42.2, OFF 10-98
IO2	3.7	NA	3.7	10.7/18.9	OFF	4.2	OFF	18.9, OFF 7-11
SS1	24.3	6.5	30.8	26.6/NA	ON	27.1	ON	NA
SS2	3.3	NA	3.3	11.9/25.6	OFF	3	OFF	25.6, OFF 7-11
SS3	22.9	NA	22.9	24.4/33.8	OFF	23.5	OFF	33.8, OFF 10-11
SS4	6.1	NA	6.1	7.7/15.9	OFF	7.2	OFF	15.9, OFF 7-05
BG2	27.5	6.6	34.1	12.1/NA	ON	24.7	ON	NA

H - These values of soil water required for well turn-on were derived using calculations based on percent cover that were routinely performed in the past. The values have not been updated to conform to the Greenbook equations in section III.D.2, p. 57-59.

Table 3. Annual Pumping Capacity According to Monitoring Sites with ON Status and Planned Pumping for the First Six Months of Runoff Year 2013-14

Wellfield	Monitoring	Associated Production Wells	Available Capacity (AF)	Planned Pumping (AF)
Laws	L2	236, 239, 243, 244	10,426	
	L5*	245, 387, 388	9,122	
	Exempt	236**, 354, 365, 413	3,337	
	Wellfield Pumpage		22,885	5,760-7,200
Bishop	All wells	140, 371, 406, 407, 408, 410, 411, 412	18,000	
	Wellfield Pumpage		18,000	9,000
Big Pine	BP4	331	7,530	
	Exempt	218, 219, 330, 332, 341, 352, 415	28,750	
	Wellfield Pumpage		36,280	11,500-12,900
Taboose Aberdeen	TA5	349	12,091	
	Exempt	118	2,462	
	Wellfield Pumpage		14,553	4,200-7,380
Thibaut Sawmill	TS2	155	796	
	Exempt	351, 356	13,200	
	Wellfield Pumpage		13,996	6,600
Indep. - Oak	Exempt	59, 60, 61, 65, 357, 383EM, 384EM, 401	13,973	
	Wellfield Pumpage		13,973	5,280-6,600
Symmes Shepherd	SS1	69, 392, 393	8,254	
	Exempt	402EM	1,000	
	Wellfield Pumpage		9,254	3,100
Bairs Georges	BG2	76, 343, 348, 403	4,770	
	Exempt	343	500	
	Wellfield Pumpage		4,770	1,320
Lone Pine	Exempt	344, 346, 390	700	
	*	416		
	Wellfield Pumpage		700	560
Owens Valley Total			134,411	47,370-54,660

* Monitoring site has yet to be located.

Figure 2 - Owens Valley Pumping - Provided by Water Agreement vs Actual

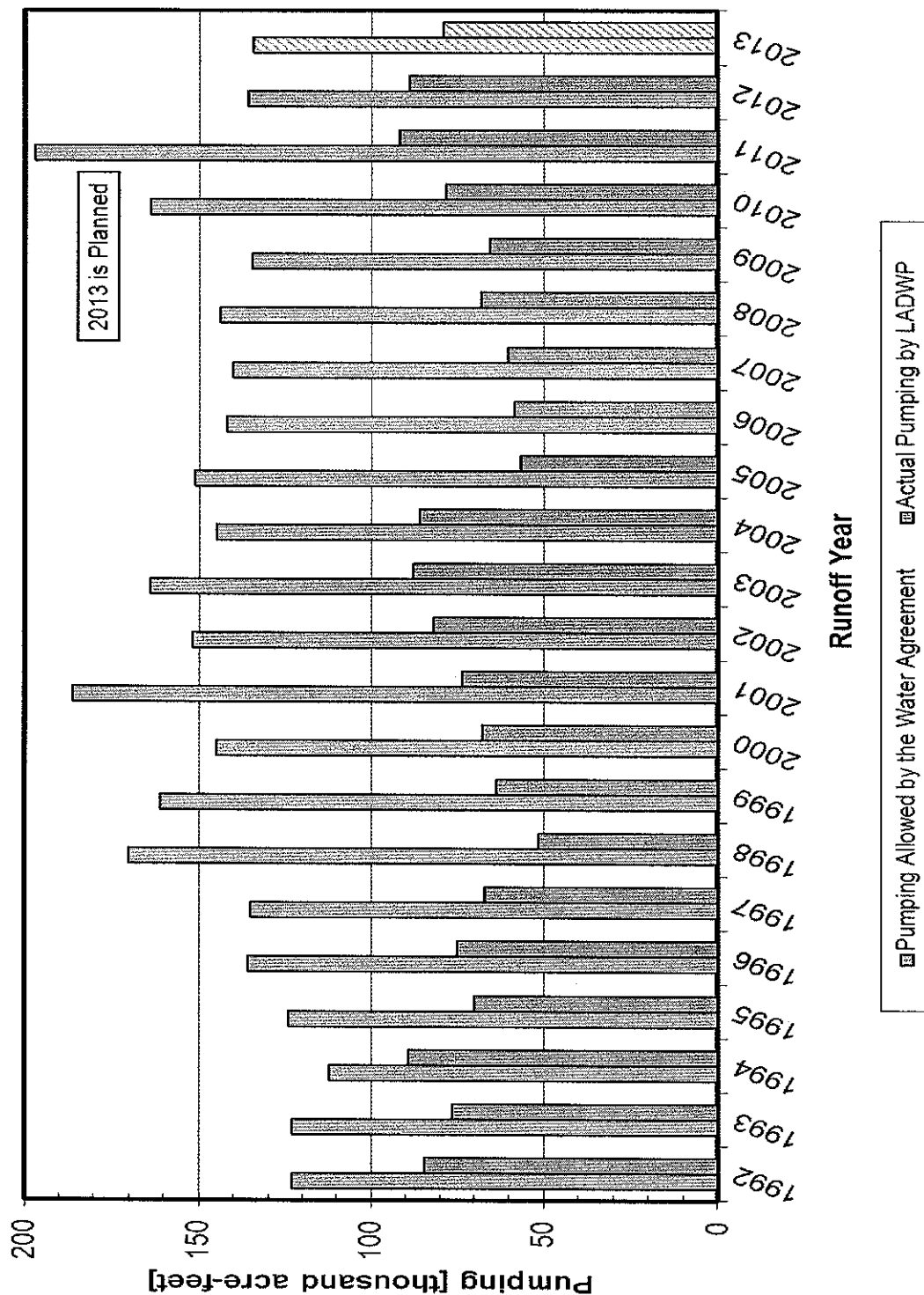


Figure 2. Owens Valley Pumping – Provided by Water Agreement vs Actual

Table 4 - Summary of Recharge and Pumping for Water Year 1994 - 2012 and Estimated Pumping Limit for Apr-Sep 2013 in Acre-Feet

Water Year	OWENS VALLEY Runoff Percent	LAWES Recharge Pumping	BISHOP Recharge Pumping	BIG PINE Recharge Pumping	TABOOSE-THIBAUT Recharge Pumping	IND-SYM-BAIRS Recharge Pumping	LONE PINE Recharge Pumping	OWENS VALLEY Recharge Pumping
1994	60%	12,026	35,793	19,430	21,977	28,106	11,554	128,885
1995	137%	28,115	55,397	38,758	46,375	55,103	22,296	246,044
1996	123%	12,588	50,754	33,228	42,097	51,113	19,757	209,537
1997	125%	15,237	49,949	33,474	42,837	52,100	19,962	213,559
1998	139%	28,195	55,343	40,663	46,845	55,605	20,341	246,361
1999	95%	18,546	42,588	28,013	32,426	41,090	15,481	177,944
2000	80%	11,102	39,539	23,213	27,567	37,015	14,344	152,780
2001	77%	12,259	38,772	22,655	27,960	33,469	13,520	148,674
2002	63%	11,184	35,514	19,715	22,495	28,820	12,103	129,831
2003	75%	11,454	38,486	21,885	26,166	32,455	13,088	143,532
2004	71%	11,138	37,149	21,500	25,159	29,771	11,357	135,586
2005	120%	18,389	47,471	32,686	40,500	46,441	17,191	202,678
2006	138%	35,336	54,337	39,650	47,577	55,893	19,956	250,911
2007	64%	10,947	34,470	19,757	22,855	27,624	10,454	129,108
2008	68%	10,855	35,850	20,432	28,619	27,759	11,563	135,078
2009	73%	11,049	37,416	21,555	29,385	29,359	12,147	140,912
2010	93%	11,154	41,987	26,566	35,541	36,863	11,882	166,362
2011	134%	17,375	52,182	35,539	47,562	50,619	19,057	222,333
2012	72%	11,058	37,315	21,297	28,369	28,905	11,538	138,482
2013 (a)	52%	10,547	30,756	15,352	19,250	21,519	9,212	106,636
(b) TOTAL		308,726	855,609	539,264	670,442	773,508	301,044	3,448,592
Estimated Apr-Sep 2013 Pumping Limit		180,387	671,783	78,063	274,087	541,152	278,119	2,023,590

(a) Estimated Recharge for the 2013 Water Year, Approximate Pumping for First Half of Water year 2013 (Oct-Mar).

(b) Estimated 20 Year Total for Recharge; actual 19.5 Year Total for Pumping.

Table 5. Exempt Wells in Owens Valley

LADWP Groundwater Pumping Wells Exempt from Water Agreement ON/OFF Provisions

Revised June 22, 2010

Well Number	Well Field	Duration	Reason
354 p ⁽¹⁾	Laws	Annual	Sole Source-Town Supply
413 b ⁽¹⁾	Laws	Annual	Sole Source-Town Supply and E/M Supply
341 b ⁽¹⁾	Big Pine	Annual	Sole Source-Town Supply
352 b ⁽¹⁾	Big Pine	Annual	Same as above
415 p ⁽¹⁾⁽⁶⁾	Big Pine	Annual	Same as above
357 p ⁽¹⁾	Independence-Oak	Annual	Same as above
384 b ⁽¹⁾⁽²⁾	Independence-Oak	Annual	Same as above
344 p ⁽¹⁾	Lone Pine	Annual	Same as above
346 b ⁽¹⁾	Lone Pine	Annual	Same as above
330 ⁽³⁾	Big Pine	Annual	Sole Source-Fish Hatcheries
332 ⁽³⁾	Big Pine	Annual	Same as above
409 ⁽³⁾	Big Pine	Annual	Same as above
351	Thibaut-Sawmill	Annual	Same as above
356	Thibaut-Sawmill	Annual	Same as above
218	Big Pine	Annual	No impact on areas with groundwater dependent vegetation
219	Big Pine	Annual	Same as above
118	Taboose-Aberdeen	Annual	Same as above
401	Independence-Oak	Annual	Same as above
59	Independence-Oak	Annual	Same as above
60	Independence-Oak	Annual	Same as above
65	Independence-Oak	Annual	Same as above
383 E/M	Independence-Oak	Annual	Same as above
384 E/M ⁽²⁾	Independence-Oak	Annual	Same as above
61	Independence-Oak	Irrigation season	Sole Source-Irrigation; no impact on areas with groundwater dependent vegetation
402 E/M	Symmes-Shepherd	Irrigation season	Same as above
390 E/M	Lone Pine	Irrigation season	Same as above
343	Bairs-Georges	Irrigation season in below average runoff years	Sole Source-Irrigation in below average runoff years
365 ⁽⁴⁾	Laws	Annual	Sole Source-Irrigation; no impact on areas with groundwater dependent vegetation
236 ⁽⁴⁾	Laws	Irrigation Season	Sole Source-Irrigation
413 E/M ⁽⁵⁾	Laws	Irrigation Season	Sole Source-Irrigation

1. Primary town supply well is designated by p; Backup town supply well is designated by b.
2. Well 384 is a dual purpose well, water to Enhancement/Mitigation (E/M) supply is indicated by 384 and Independence domestic supply is indicated as 384 b.
3. Wells 330, 332, and 409 may only be pumped two at a time, unless pumped for testing or emergencies.
4. Well 365 designated as primary and Well 236 designated as backup irrigation supply.
5. Well 413 is a dual purpose well. Water is supplied to the Laws Museum Irrigation Projects east and west of the museum and Laws domestic supply is indicated as 413b.
6. Currently not pump-equipped.

**Table 6. Planned Owens Valley Pumping for the First Six Months of 2013-14
Runoff Year (acre-feet)**

Month	Laws	Bishop	Big Pine	Taboose- Aberdeen	Tribaut- Sawmill	Indep.- Oak	Symmes- Shepherd	Bairs- Georges	Lone Pine	TOTAL
April	960-1,200	1,500	2,150	1,250	1,100	880-1,100	860	300	100	9,080-9,540
May	960-1,200	1,500	2,150	1,250	1,100	880-1,100	860	300	100	9,080-9,540
June	960-1,200	1,500	2,150	1,020-1,230	1,100	880-1,100	860	180	90	8,740-9,410
July	960-1,200	1,500	1,700-2,150	240-1,230	1,100	880-1,100	180	180	90	6,830-8,730
August	960-1,200	1,500	1,700-2,150	240-1,230	1,100	880-1,100	170	180	90	6,820-8,720
September	960-1,200	1,500	1,700-2,150	240-1,230	1,100	880-1,100	170	180	90	6,820-8,720
TOTAL	5,760-7,200	9,000	11,550-12,900	4,200-7,380	6,600	5,280-6,600	3,100	1,220	560	47,370-54,660

Laws Well Field (Figure 3)

Monitoring site L2 is in ON status. Production wells controlled by this monitoring site have an available production capacity of 10,426 acre-feet. Wells linked to monitoring site L5 have a capacity of 9,122 acre-feet. Exempt wells within the Laws Well Field have a capacity of 3,337 acre-feet. The sum total of available pumping capacity in the Laws Well Field is 22,885 acre-feet. Well 365 has had a reduction in production capacity and is in the process of being replaced. Well 236, associated with monitoring site L2, is used as a backup along with Well 365 as an exempt well irrigation water supply.

Planned groundwater pumping for the first half of the runoff year in the Laws Well Field is between approximately 5,760 to 7,200 acre-feet, contingent on water needs and environmental conditions. Groundwater pumping is planned to supply Owens Valley demands including the town water system, E/M projects, and irrigated lands. LADWP has requested that Inyo County consider a temporary 20% reduction in groundwater pumping to supply irrigation water in the Laws Wellfield for the 2013-14 runoff year. If the Inyo/Los Angeles Standing Committee agrees to reduce pumping for irrigation in the Laws Wellfield, pumping for the first half of the runoff year will be approximately 5,800 acre-feet.

Bishop Well Field (Figure 4)

Pumping in the Bishop Well Field is governed by the provisions of the Hillside Decree and the Water Agreement, which limit LADWP's annual groundwater extractions (pumping and flowing wells) from the Bishop Cone to an amount commensurate with the total amount of water used on City-owned lands on the Bishop Cone (including conveyance and other losses). Under the current audit protocols, total water used on City-owned lands within the Bishop Cone area is approximately 29,000 acre-feet per year. The current total available groundwater extraction capacity in the Bishop Well Field is approximately 18,000 acre-feet. The planned groundwater pumping from the Bishop Well Field is 9,000 acre-feet for the first half of the 2013-14 runoff year, contingent on water needs and environmental conditions.

Figure 5 shows water use on City-owned land on Bishop Cone in comparison to the groundwater extractions (flowing and pumping wells) for runoff years 1996 to present.

The current Bishop Cone Audit does not include a number of known uses and losses, including some uses that are currently being measured. These unaccounted for uses should be added to the total Bishop Cone Audit and the audit protocols should be revised to more accurately reflect actual uses and losses.

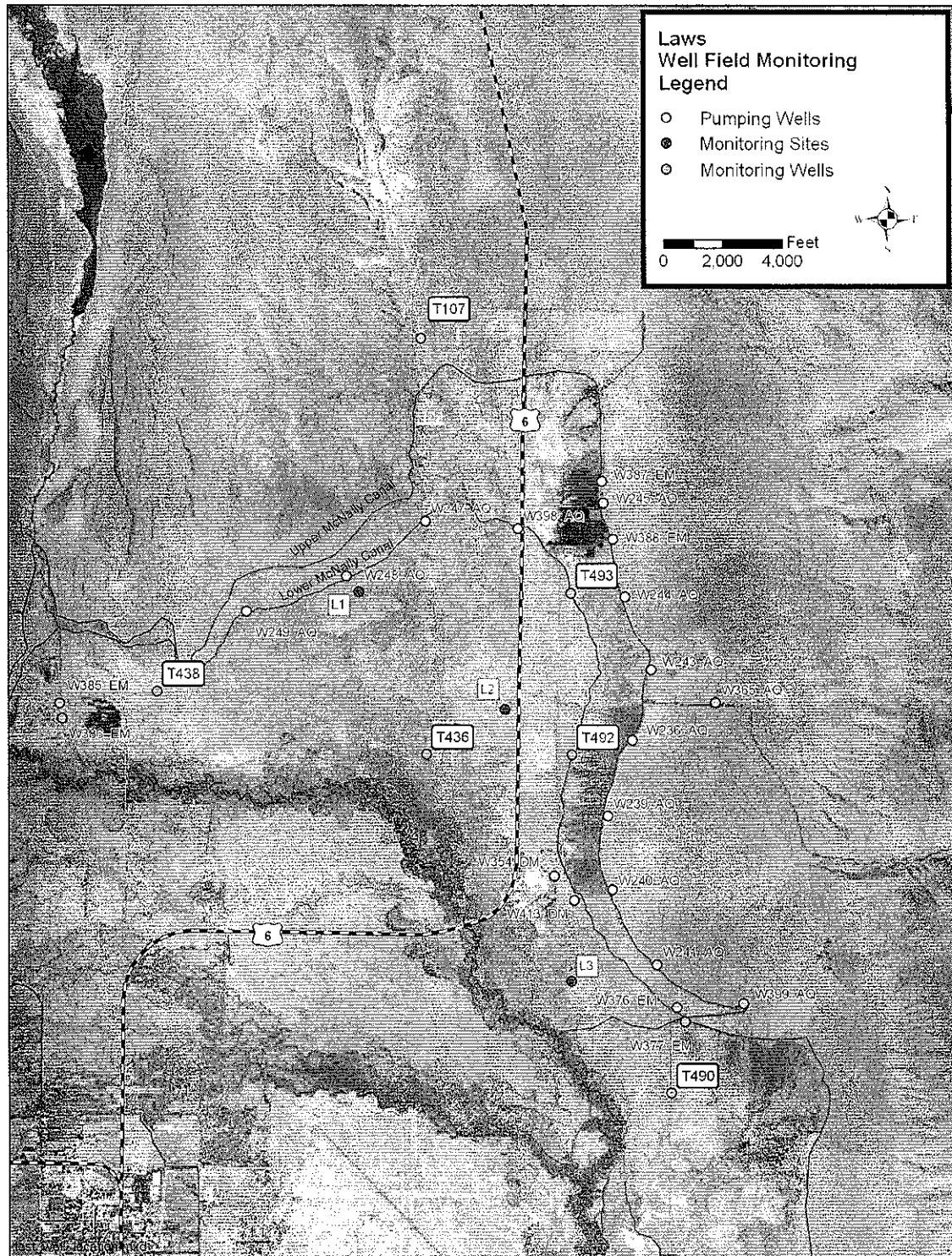


Figure 3. Laws Well Field

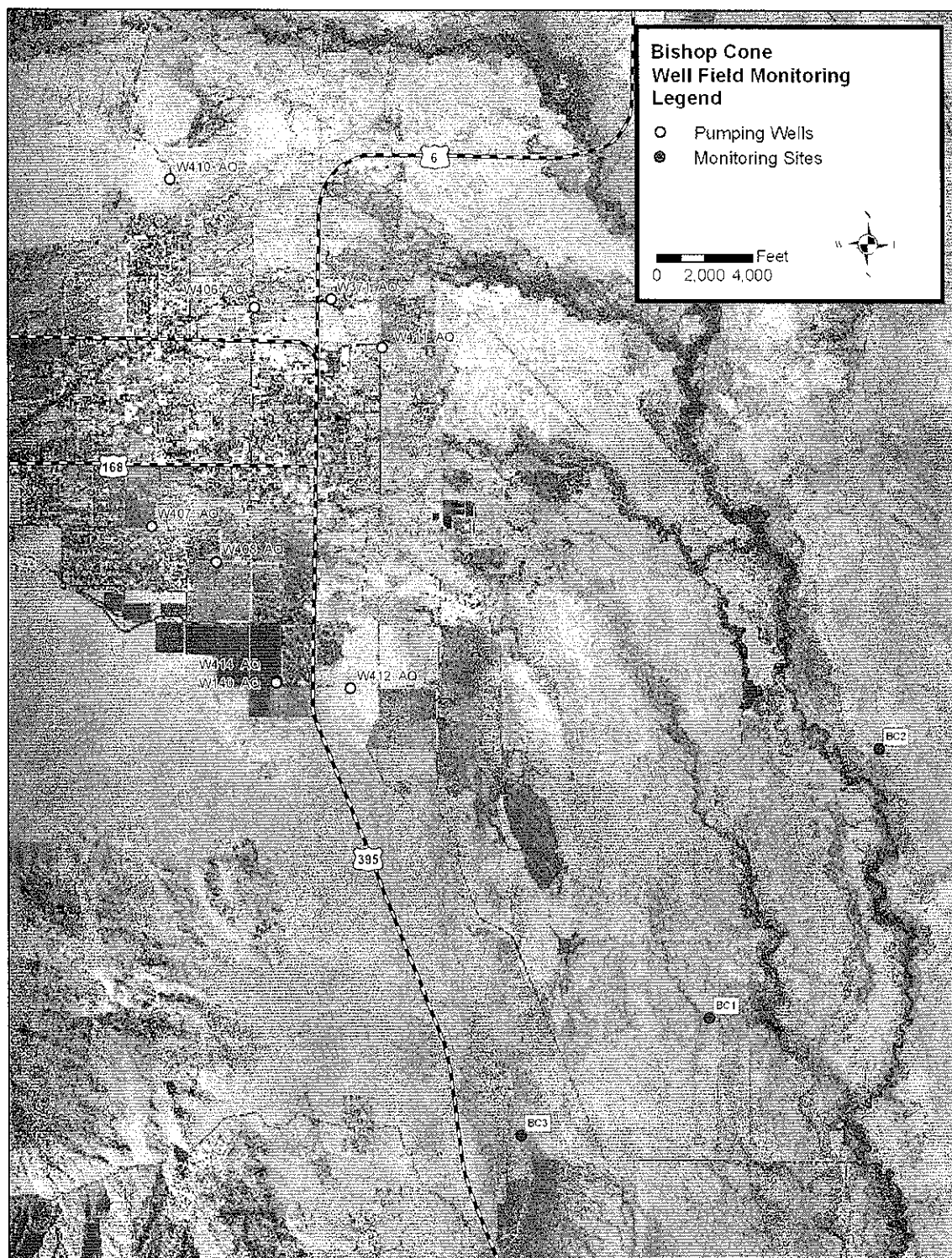


Figure 4. Bishop Cone Well Field

Figure 5. Groundwater Extraction (flowing & pumping)
and Water Use on Los Angeles-Owned Land on Bishop Cone

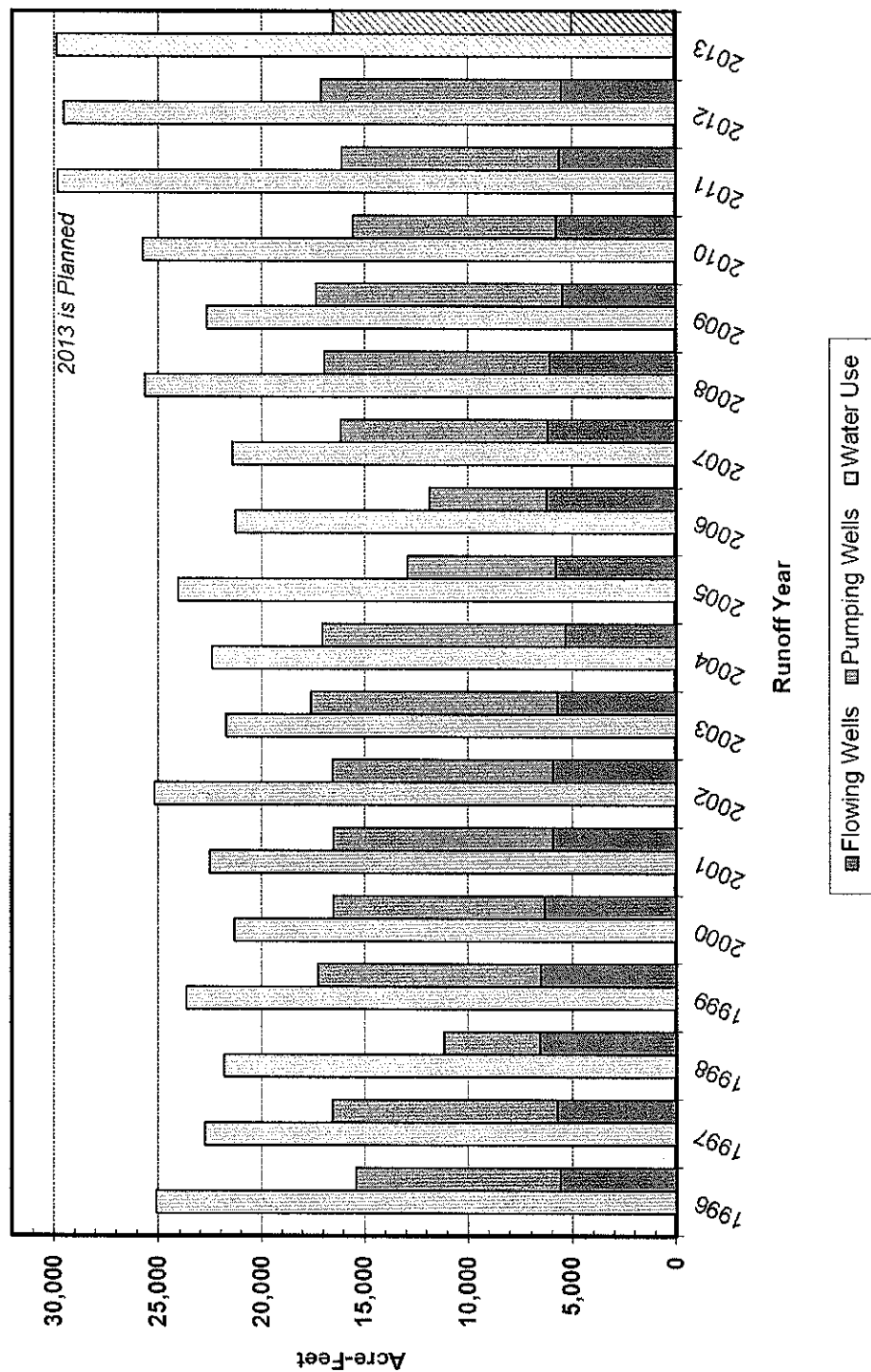


Figure 5. Groundwater Extraction (flowing & pumping)
and Water Use on Los Angeles-Owned Land on Bishop Cone

Big Pine Well Field (Figure 6)

Monitoring sites BP4 is in ON status. Production Well 331, managed in conjunction with monitoring site BP4, has a production capacity of 7,530 acre-feet. Exempt wells including Well 218, Well 219, town supply wells, and Fish Springs Fish Hatchery wells in the Big Pine Well Field have a combined capacity of 28,750 acre-feet. The total available capacity in the Big Pine Well Field is 36,280 acre-feet. The total planned pumping in the Big Pine Well Field is for the first six months of the 2013-14 runoff year is between approximately 11,500 acre-feet and 12,900 acre-feet, contingent on water needs and environmental conditions.

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Taboose-Aberdeen Well Field (Figure 7)

Monitoring site TA5 is in ON status. Production Well 349 is controlled by monitoring site TA5 and has an available pumping capacity of approximately 12,091 acre-feet. Exempt Well 118 in the Taboose-Aberdeen Well Field has a capacity of 2,462 acre-feet. The total available groundwater pumping capacity in the Taboose-Aberdeen Well Field is 14,553 acre-feet. The planned groundwater pumping in the Taboose-Aberdeen Well Field for the first half of the 2013-14 runoff year is contingent on water needs and prevailing environmental conditions and will range between 4,200 acre-feet and approximately 7,380 acre-feet.

Thibaut-Sawmill Well Field (Figure 8)

Monitoring sites TS2 is in ON status. Production well W155, controlled by monitoring site TS2 has a production capacity of 796 acre-feet. Exempt Blackrock Fish Hatchery supply wells W351 and W356 have capacities of 13,200 acre-feet and 8,110 acre-feet respectively. Blackrock Fish Hatchery demand for the 2013-14 runoff year is expected to be between approximately 12,000 acre-feet and 13,200 acre-feet. The total available pumping capacity in the Thibaut-Sawmill Well Field for the 2012-13 runoff year is about 13,996 acre-feet. Total planned pumping in the Thibaut-Sawmill Well Field for the first half of the 2013-14 runoff year is planned to be 6,600 acre-feet, subject to hatchery demands, water needs, and environmental conditions.

Independence-Oak Well Field (Figure 8)

No monitoring sites in the Independence-Oak Well Field are in ON status. Independence-Oak exempt wells have a combined capacity of 13,973 acre-feet. The total available pumping capacity in the Independence-Oak Well Field is 13,973 acre-feet. The anticipated range of groundwater pumping in the Independence-Oak Well Field for the first six months of the 2012-13 runoff year is between 5,280 and 6,600 acre-feet, which includes water for municipal, irrigation, town, and E/M project supply. LABWP has requested Inyo County to consider a temporary 20% reduction in groundwater pumping for irrigation in the Independence-Oak Well Field during the 2013-14 runoff year. If the Inyo/Los Angeles Standing Committee agrees to reduce pumping in the Independence Well Field, groundwater pumping during the first six months of the 2013-14 runoff year will be approximately 5,300 acre-feet.

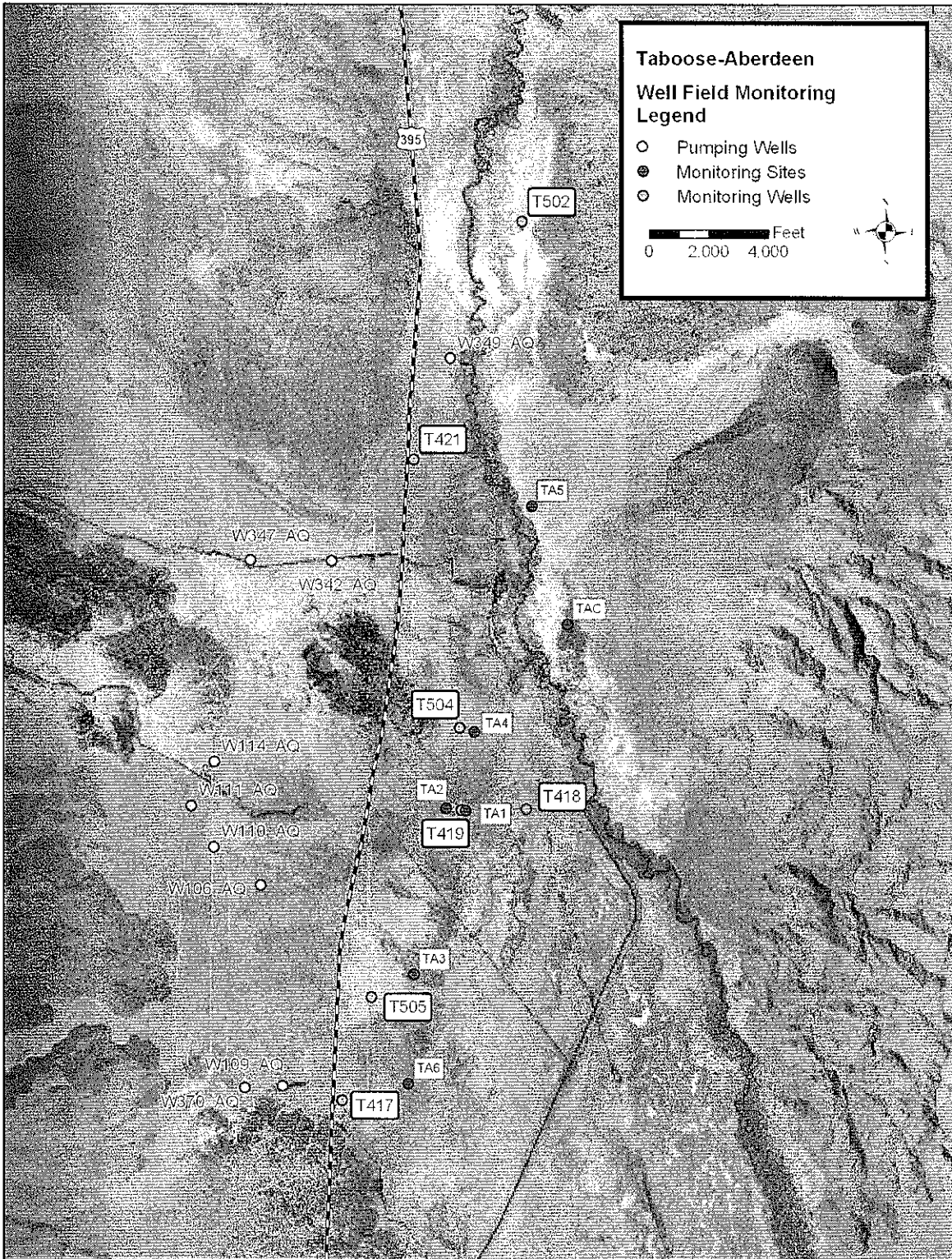


Figure 7. Taboose-Aberdeen Well Field

Symmes-Shepherd Well Field (Figure 9)

Monitoring sites SS1 is in ON status. Monitoring site SS1 has an annual capacity of 8,254 acre-feet. Exempt Well 402 has a capacity of about 1,000 acre-feet. Total available capacity in the Symmes-Shepherd Well Field for the 2013-14 runoff year is approximately 9,254 acre-feet. The total pumping in the Symmes-Shepherd Well Field for the first six months of the 2013-14 runoff year is planned to be 3,100 acre-feet, contingent on water needs and environmental conditions.

Bairs-Georges Well Field (Figure 9)

Vegetation monitoring site BG2 is in ON status. The wells managed under this site have a combined annual capacity of 4,770 acre-feet. Exempt Well 343 has an available capacity of 500 acre-feet (based upon a six month exemption period). The total available capacity in the Bairs-Georges Well Field for the 2013-14 runoff year is 4,770 acre-feet. Groundwater pumping in the Bairs-Georges Well Field for the first six months of the runoff year is planned to be approximately 1,320 acre-feet, contingent on water needs and environmental conditions.

Lone Pine Well Field (Figure 10)

Lone Pine exempt wells are Well 344 and Well 346, and E/M project supply Well 390. These three wells have an annual capacity of approximately 700 acre-feet. Well 390 has degraded in recent years and is being replaced.

Well 416 is a production well in the Lone Pine Well Field drilled in 2002. Hydrologic testing was conducted on Well 416 during the 2009-10 runoff year. The Technical Group has been requested to designate a monitoring site for this well.

The planned groundwater pumping from the Lone Pine Well Field during the first six months of the 2013-14 runoff year is 560 acre-feet, contingent on water needs and environmental conditions.

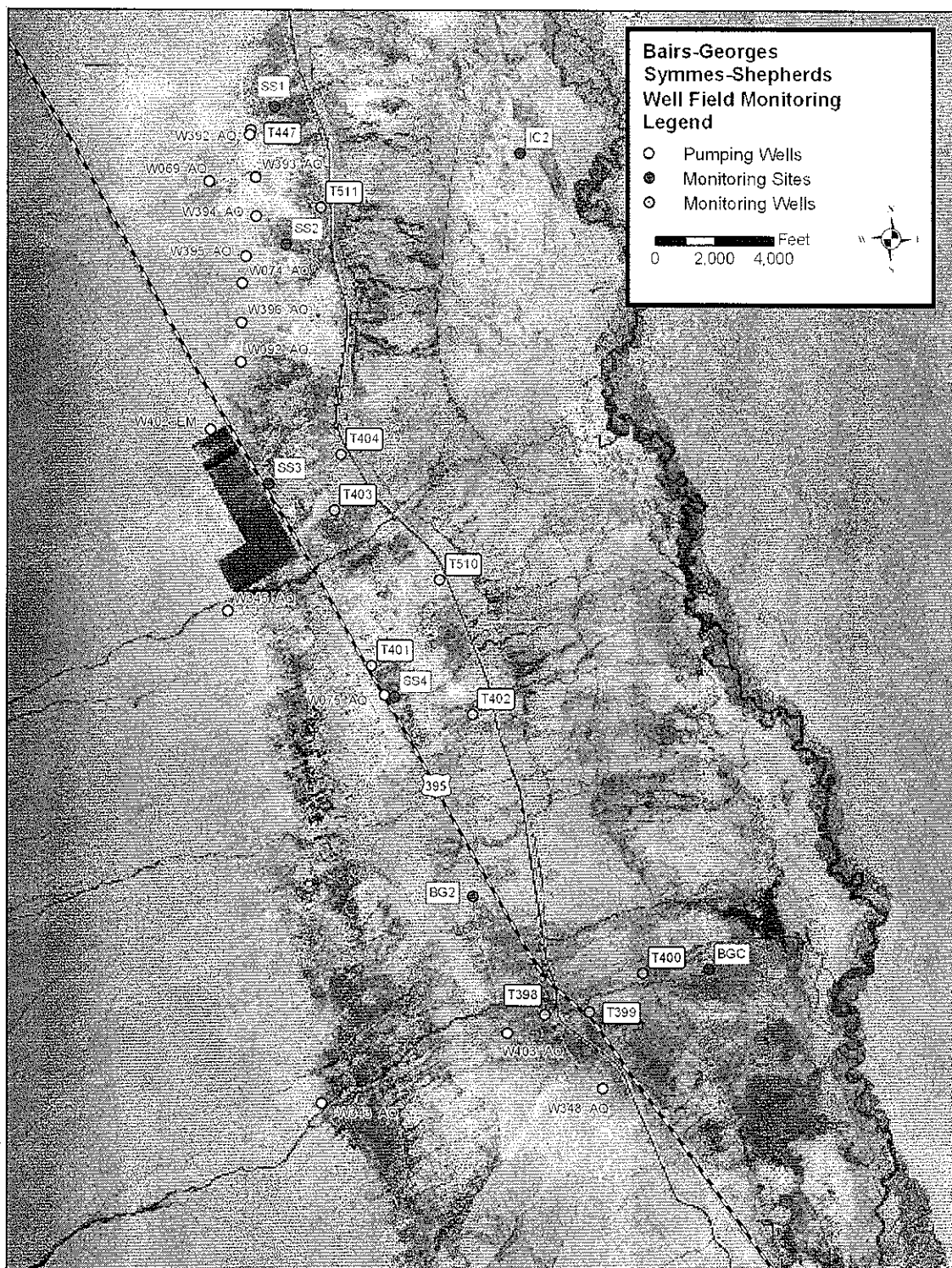


Figure 9. Bairs-Georges and Symmes-Sheperds Well Fields

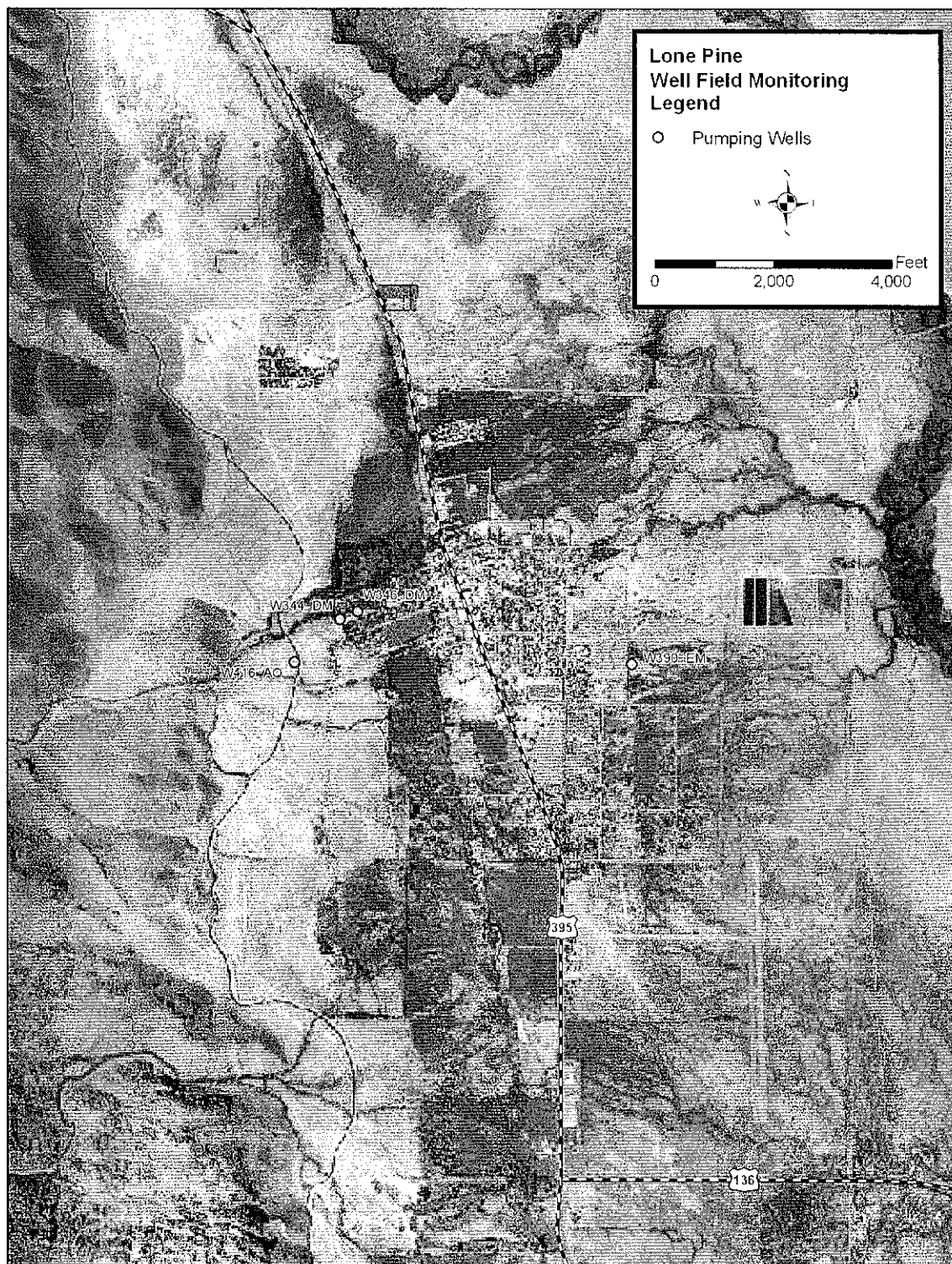


Figure 10. Lone Pine Well Field

2.3. Owens Valley Uses (Including Enhancement/Mitigation Projects)

Table 7 shows the historic (1981-82) uses and the planned monthly uses within the Owens Valley for 2013-14. The in-valley uses shown on Table 7 consist of irrigation, stockwater, recreation, and wildlife projects, E/M supply, LORP project usage, and usage pursuant to California Health and Safety Code Section 42316 for dust abatement projects on Owens Lake. As shown in Table 7 and Figure 11, LADWP plans to provide approximately 198,800 acre-feet for in-valley uses this runoff year, not including water supplied to the Owens Valley reservations.

The primary consumptive use of water in the Owens Valley is the Owens Lake Dust Mitigation Program (OLDMP). Water use in the 2012-13 runoff year by the OLDMP was 75,300 acre-feet. Depending on prevailing conditions, water use by the OLDMP in 2013-14 may be as much as 95,000 acre-feet.

Releases to the LORP from the LAA Intake facility began on December 6, 2006. An average flow of over 40 cfs is now maintained throughout the entire 62 mile stretch of the Lower Owens River, south of the Intake structure. When needed, the releases at the Intake are augmented through additional releases at the Independence, Blackrock, Georges, Locust, and Alabama Spill Gates to maintain a continuous flow of at least 40 cfs in the river channel. Table 7 shows estimated water use by the Lower Owens River on a monthly basis. Water use by the project during 2012-13 was approximately 20,900 acre-feet. Total LORP uses include the Lower Owens River, Owens Delta, Blackrock Waterfowl Management Area, and project associated losses

The Water Agreement provides that "... *enhancement/mitigation projects shall continue to be supplied by enhancement/mitigation wells as necessary.*" Due to the monitoring sites controlling some of the production wells supplying E/M projects being in OFF status, the amount of water supplied to E/M projects has often exceeded the amount of water provided by E/M project supply wells. LADWP has chosen to supply certain E/M projects from surface water sources in the past. Future E/M allotments may be influenced by the availability of E/M wells and operational demands. Table 8 shows the planned water supply to E/M projects and the forecast imbalance between the E/M project water use and the E/M project groundwater supply through the end of the 2013-14 runoff year. E/M project water demands during the 2013-14 runoff year are expected to be approximately 3,000 acre-feet greater than E/M groundwater pumping. The cumulative E/M water supply shortfall is estimated to be approximately 187,866 acre-feet by the end of the runoff year.

The Technical Group is currently evaluating the water supply issues associated with the E/M projects and will provide its findings to the Inyo/Los Angeles Standing Committee. It is expected that the Standing Committee will be requested to take appropriate action necessary to ensure water supplied to E/M projects is in conformance with the provisions of the Water Agreement.

Table 7. Historic (1981-82) and Projected (2013-14) Water Uses on City-Owned Land in Owens Valley (acre-feet)

Use	April		May		June		July		August		September		TOTAL	
	1981	2012	1981	2012	1981	2012	1981	2012	1981	2012	1981	2012	1981	2012
Irrigation	3,980	7,100	7,958	10,700	10,373	10,700	9,476	9,700	8,295	9,500	6,321	6,000	46,403	52,500
Stockwater	1,141	1,000	1,316	1,000	1,244	1,000	1,145	1,050	1,219	1,050	1,319	900	7,487	6,000
E / M	0	1,000	0	1,200	0	1,300	0	1,700	0	1,700	0	1,200	0	8,100
LORP	0	1,400	0	2,700	0	1,500	0	4,600	0	2,700	0	2,300	0	18,000
Owens Lake	0	13,200	0	13,200	0	12,700	0	3,000	0	8,600	0	12,700	0	63,400
Rec. & Wildlife	379	570	804	950	1,150	1,050	1,455	1,400	1,381	1,100	1,406	950	6,585	6,020
Total	5,500	24,270	10,081	29,150	12,777	30,450	12,176	21,450	10,895	24,650	9,046	24,050	60,475	154,020

Use	October		November		December		January		February		March		TOTAL	
	1981	2012	1981	2012	1981	2012	1982	2013	1982	2013	1982	2013	81-82	13-14
Irrigation	263	200	0	0	0	0	0	0	0	0	14	100	277	300
Stockwater	1,065	900	1,045	800	1,050	800	1,007	800	1,010	800	1,098	800	6,275	5,000
E / M	0	300	0	100	0	100	0	100	0	100	0	100	0	800
LORP	0	1,000	0	500	0	700	0	500	0	400	0	900	0	4,000
Owens Lake	0	10,800	0	3,900	0	2,000	0	2,000	0	3,900	0	9,000	0	31,600
Rec. & Wildlife	781	900	713	550	565	500	478	400	342	300	447	430	3,326	3,080
Total	2,109	14,100	1,758	5,850	1,615	4,100	1,485	3,800	1,352	5,500	1,559	11,430	9,878	44,780

		April-Mar		81-82		13-14		TOTAL	
		81-82	13-14	81-82	13-14	81-82	13-14	81-82	13-14
Irrigation		46,680	52,800	46,680	52,800	46,680	52,800	46,680	52,800
Stockwater		13,762	11,000	13,762	11,000	13,762	11,000	13,762	11,000
E / M		0	8,900	0	8,900	0	8,900	0	8,900
LORP		0	22,000	0	22,000	0	22,000	0	22,000
Owens Lake		0	95,000	0	95,000	0	95,000	0	95,000
Rec. & Wildlife		9,911	9,100	9,911	9,100	9,911	9,100	9,911	9,100
Total		70,353	198,800	70,353	198,800	70,353	198,800	70,353	198,800

NOTE: REC & WILDLIFE INCLUDES LORP OFF-RIVER LAKE & PONDS WATER USE

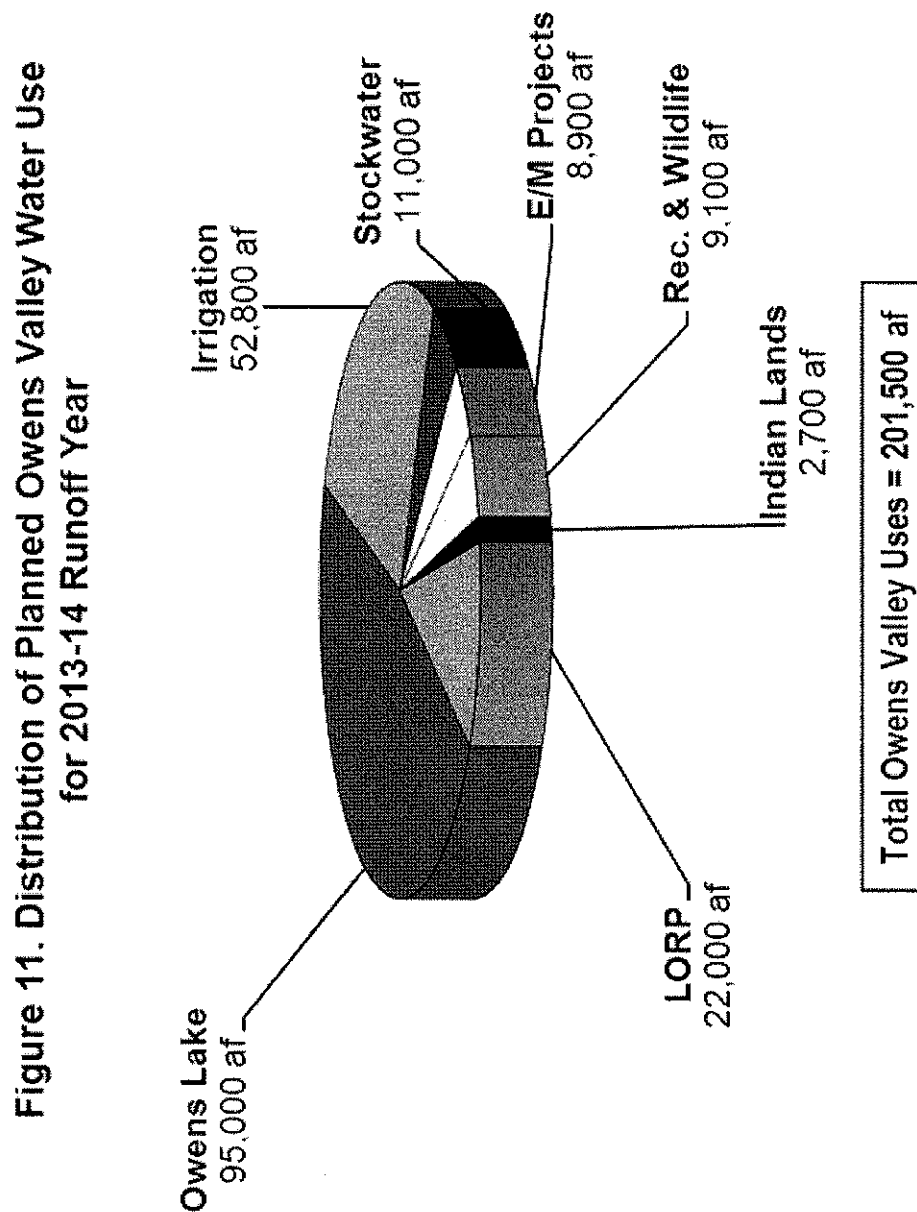


Figure 11. Distribution of Owens Valley Water Use for 2013-14 Runoff Year

Table 8. Owens Valley Groundwater Pumping for Production and E/M Water Use (1984-85 through 2013-14 Runoff Year (acre-feet))

Runoff Year	Owens Valley Runoff (1)	Total Pumping	Non-E/M Pumping	E/M Pumping	E/M Water Uses	E/M Pumping & Use Imbalance	Cumulative E/M Pumping & Use Imbalance
1984-85	121	61,981	61,981	0	0		0
1985-86	103	107,718	107,718	0	109		0
1986-87	158	69,887	69,887	0	12,696	(3)	0
1987-88	68	209,394	179,884	29,510	29,360		0
1988-89	62	200,443	171,012	29,431	30,872		0
1989-90	63	155,972	133,409	22,563	23,330		0
1990-91	52	88,904	70,817	18,087	17,949		0
1991-92	64	87,310	71,520	15,790	20,517	-4,727	-4,727
1992-93	61	84,453	70,688	13,765	18,487	-4,592	-9,319
1993-94	106	76,329	67,338	8,991	19,310	-10,319	-19,638
1994-95	66	89,219	78,209	11,010	20,812	-9,802	-29,440
1995-96	153	69,752	57,180	12,572	22,914	-10,342	-39,782
1996-97	135	74,904	57,981	16,923	23,949	-7,026	-46,808
1997-98	124	66,914	52,760	14,154	21,500	-7,346	-54,154
1998-99	149	51,574	47,353	4,221	19,672	(3)	-54,154
1999-00	89	63,675	59,342	4,333	24,450	-20,117	-74,271
2000-01	84	67,795	61,456	6,339	20,611	-14,272	-88,543
2001-02	83	73,349	70,055	3,294	21,815	-18,521	-107,064
2002-03	66	81,979	76,059	5,920	21,394	-15,474	-122,538
2003-04	81	87,732	80,734	6,998	21,116	-14,118	-136,656
2004-05	77	85,820	78,110	7,710	18,327	-10,617	-147,273
2005-06	136	56,766	51,695	5,071	19,356	-14,285	-161,558
2006-07	146	58,621	53,925	4,696	17,357	(3)	-161,558
2007-08	61	60,338	53,443	6,925	11,312	-4,387	-165,945
2008-09	74	68,971	61,053	7,918	10,646	-2,728	-168,673
2009-10	77	64,135	57,946	6,192	10,695	-4,503	-173,176
2010-11	103	78,248	71,233	7,015	10,807	-3,792	-176,968
2011-12	142	91,699	84,365	7,334	11,993	-4,659	-181,627
2012-13	57	88,000	82,345	5,655	8,914	-3,259	-184,886
2013-14 (2)	54	54,660	49,560	5,100	8,100	-3,000	-187,886

(1) Based on 1961-2010 average: 415,974 acre-feet. Includes some runoff contribution to the Laws Wellfield from the White Mountains.
(2) this is only Apr-Sep pumping/uses. Forecast for planned pumping of 54,660 acre-feet (planned pumping ranges 44,610-54,660 acre-feet)
(3) surface water was available

2.4. Aqueduct Operations

Table 9 shows planned LAA reservoir storage levels and monthly deliveries to Los Angeles. Based on this plan, a total of 69,000 acre-feet will be exported from Inyo and Mono Counties to the City during the 2013-14 runoff year.

2.5. Water Exports to Los Angeles

Figure 12 provides a record of water exports from the Eastern Sierra to Los Angeles, averaging approximately 350,000 acre-feet per year since 1970. Figure 13 shows the LAA contribution to the City water supply relative to other sources and the total annual water supplied to Los Angeles since 1970. LADWP estimates that Los Angeles will require about 557,452 acre-feet of water during the 2013-14 runoff year. It is anticipated that water from the Eastern Sierra will make up about 12% of the 2013-14 supply. Water purchases from the Metropolitan Water District of Southern California will provide about 78% of the City's supply, groundwater from Los Angeles area aquifers will provide about 8%, and recycled water will supply about 1% of the City's water needs.

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Table 9. Planned Los Angeles Aqueduct Operations for 2013-14 Runoff Year

Month	Owens Valley-Bouquet Reservoir Storage 1st of month Storage (acre-feet)	Aqueduct Delivery to Los Angeles (acre-feet)
April	161,282	1,190
May	165,224	1,537
June	162,683	3,868
July	155,496	3,608
August	145,218	10,146
September	129,225	6,843
October	112,968	2,017
November	110,954	4,463
December	120,313	4,612
January	135,667	3,074
February	153,430	8,331
March	162,314	12,298
TOTAL		66,986

Figure 12. Water Export from Eastern Sierra to Los Angeles

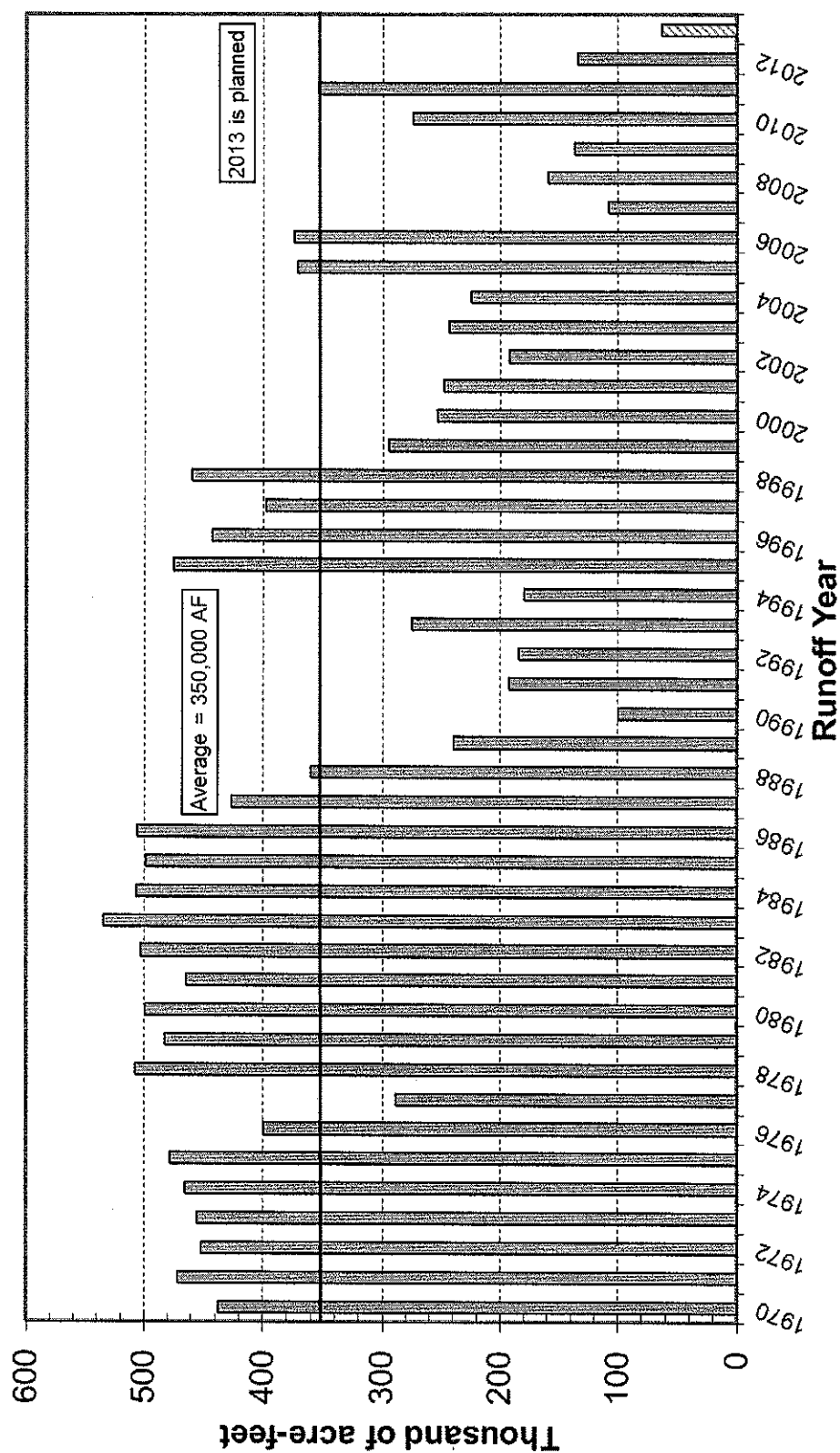


Figure 12. Water Export from the Eastern Sierra to Los Angeles

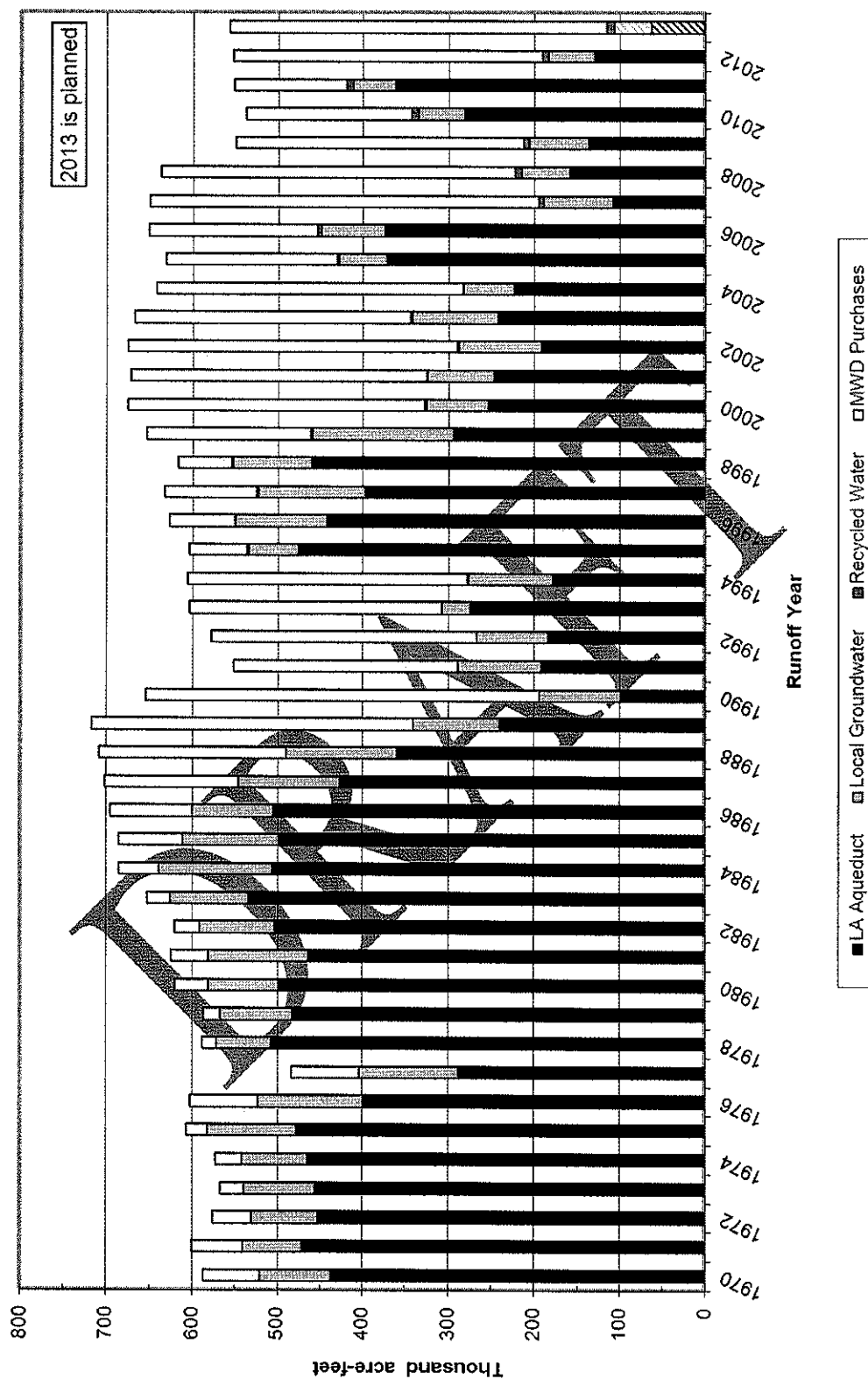


Figure 13. Sources of Water for the City of Los Angeles